



Modelling and Prediction of Motion Sickness and Motion Perception in Automated Vehicles and Driving Simulators

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Can we prevent motion sickness in the age of automated driving?

As automated vehicles position drivers as passive passengers and simulators become increasingly immersive, motion sickness has emerged as a critical barrier to user acceptance. Traditional models rely on group averages and focus on extreme outcomes, failing to capture the subtle, individual discomforts like nausea and dizziness that ruin the passenger experience.

This book presents a framework for predicting and mitigating motion sickness at the individual level by moving beyond a one-size-fits-all approach. The research introduces a personalized modeling method that adapts to specific user sensitivities using two key parameters and proposes critical updates to sensory conflict models to better align visual perception with reality. These culminate in a novel control algorithm for simulators that reduces motion sickness by over 50% without sacrificing realism. This work aims to bridge the gap between biological variability and mechanical design to create a more comfortable experience.